

REVISIONS TO THE STATE IMPLEMENTATION PLAN (SIP)
FOR THE CONTROL OF OZONE AIR POLLUTION

ATTAINMENT DEMONSTRATION FOR THE
DALLAS/FORT WORTH OZONE NONATTAINMENT AREA

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
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RULE LOG NO. 2002-070a-SIP-AI

MARCH 5, 2003

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LIST OF ACRONYMS

ACT - Alternative Control Techniques
AFV - Alternative Fuel Vehicle
AIRS - Aerometric Information Retrieval System
APA - Administrative Procedure Act
ARACT - Alternate Reasonably Available Control Technology
ARPDB - Acid Rain Program Data Base
ASC - Area Source Categories
ASE - Alliance to Save Energy
ASM - Acceleration Simulation Mode
ATA - Airline Transport Association
ATC - Air Traffic Control
BACT - Best Available Control Technology
BEIS - Biogenic Emissions Inventory System
BEIS-2 - Biogenic Emissions Inventory System, version2
BELD - Biogenic Emissions Land Cover Database
BIF - boilers and industrial furnaces
BIOME - Biogenic Model for Emissions
BPA - Beaumont/Port Arthur
Cal LEV - California Low Emission Vehicle
CAM - Compliance Assurance Monitoring
CAMS - Continuous Air Monitoring Station
CAMx - Comprehensive Air Model with Extensions
CARB - California Air Resources Board
CARE - Clean Air Responsibility Enterprise
CB-IV HC - Carbon Bond IV Hydrocarbon
CFR - Code of Federal Regulations
CEMS - Continuous Emissions Monitoring System
CMAQ - Congestion Mitigation and Air Quality
CMSA - Consolidated Metropolitan Statistical Area
CNG - Compressed Natural Gas
CO - Carbon Monoxide
CO₂ - Cardon Dioxide
COAST - Coastal Oxidant Assessment for Southeast Texas
CTG - Control Technique Guidelines
DART - Dallas Area Rapid Transit
DERC - Discrete Emission Reduction Credit
DFW - Dallas/Fort Worth
DFWN - Dallas/Fort Worth North
DFWRTM - Dallas/Fort Worth Regional Travel Model
DOW - Day of Week
DPS - Department of Public Safety
DRI - Desert Research Institute
DV - Design Value
EDFW - Extended Dallas/Fort Worth
EGAS - Economic Growth Analysis System
EGF - Electric Generating Facilities

EGR - Exhaust Gas Recirculation
E-GRID - Emissions and Generation Resource Integrated Database
EI - Emissions Inventory
EIA - Energy Information Administration
EIQ - Emissions Inventory Questionnaire
ELP - El Paso
EPA - U.S. Environmental Protection Agency
EPN - Emission Point Number
ERC - Emission Reduction Credit
ERCOT - Energy Reliability Council of Texas
ERG - Eastern Research Group
ETR - Employer Trip Reduction
ETS/CEM - Emissions Tracking System/Continuous Emissions Monitoring
FAA - Federal Aviation Administration
FACA - Federal Advisory Committee Act
FCAA - Federal Clean Air Act
FERC - Federal Energy Regulatory Commission
FMVCP - Federal Motor Vehicle Control Program
FR - Federal Register
FTE - Full Time Equivalent Employee
FTP- Federal Test Procedures
FTP - File Transfer Protocol
g/hp-hr - Grams Per Horsepower-Hour
GIS - Geographic Information System
GloBEIS - Global Biogenic Emissions Inventory System
g/mi - Grams Per Mile
GPM-Gallons Per Minute
GSE - Ground Support Equipment
GVWR - Gross Vehicle Weight Rating
HAP - Hazardous Air Pollutant
HAXL - Houston Air Excellence in Leadership
HB - House Bill
HC - Hydrocarbon
HDD - Heavy-duty Diesel
HDDV - Heavy-duty Diesel Vehicle
HDEWG - Heavy Duty Engine Working Group
HDV - Heavy-duty Vehicle
HGA - Houston/Galveston
HGAC - Houston-Galveston Area Council
HON - Hazardous Organic NESHAPS
HOV - High Occupancy Vehicle
hp - Horsepower
HPMS - Highway Performance Monitoring System
HRM - Houston Regional Monitoring
ICI - Industrial, Commercial, and Institutional
IIG - Interim Implementation Guidance
IIP - Interim Implementation Plan
I/M - Inspection and Maintenance

INIT - Initial Condition Tracer
ITWS - Integrated Terminal Weather System
IWW - Industrial Wastewater
KG/HA - Kilograms/hectare
KM - Kilometer
LBNL - Lawrence Berkeley National Laboratory
LDT - Light-duty Truck
LED - Low Emission Diesel
LEV - Low Emission Vehicle
LNG - Liquefied Natural Gas
LSG - Low Sulfur Gasoline
m - Meter
MACT - Maximum Achievable Control Technology
MDERC - Mobile Discrete Emission Reduction Credit
MERC - Mobile Emission Reduction Credit
METT - Mass Emissions Transient Testing
MMBtu - Million British Thermal Unit
MPA - Metropolitan Planning Area
MWh - Megawatt Per Hour
MY - Model Year
NAAQS - National Ambient Air Quality Standard
NCDC - National Climatic Data Center
NCTCOG - North Central Texas Council of Governments
NEGU - Non-electric Generating Units
NERC - North American Electric Reliability Council
NESHAPS - National Emission Standards for Hazardous Air Pollutants
NET - National Air Pollutant Emission Trends
NEVES - Non-road Engine and Vehicle Emission Study
NHSDA - National Highway System Designation Act
NLEV - National Low Emission Vehicle
NNSR - Nonattainment New Source Review
NO_x - Nitrogen Oxides or Oxides of Nitrogen
NO_y - Nitrogen Species
NSR - New Source Review
NWS - National Weather Service
O₃ - Ozone
OAQPS - Office of Air Quality Planning and Standards
OBD - On-Board Diagnostics
OSAT - Ozone Apportionment Technology
OTAG - Ozone Transport Assessment Group
OTAQ - Office of Transportation and Air Quality
PAMs - Photochemical Assessment Monitoring Sites
PCA - Power Control Area
PCV - Positive Crankcase Ventilation
PEI - Periodic Emissions Inventory
PM₁₀ - Particulate Matter less than 10 microns
ppb - Parts Per Billion
ppm - Parts Per Million

ppmv - Parts Per Million by Volume
 PSDB - Point Source Database
 PSIA - Pounds per Square Inch Absolute
 PSIG- Pounds per Square Inch Gauge
 PUC- Public Utility Commission
 QA/QC - Quality Assurance/Quality Control
 RACT - Reasonably Available Control Technology
 RAQPC - Regional Air Quality Planning Committee
 RAZ - Regional Analysis Zone
 RCTSS - Regional Computerized Traffic Signal System
 RFG - Reformulated Gasoline
 REMI - Regional Economic Modeling, Inc.
 RFO - Request for Offer
 ROP - Rate-of-Progress
 RPM - Revolutions Per Minute
 RSD - Remote Sensing Device
 RVP - Reid Vapor Pressure
 SAE - Society of Automotive Engineers
 SAIMM - Systems Applications International Meteorological Model
 SB - Senate Bill
 SCAQMD - South Coast Air Quality Management District [Los Angeles area]
 SCC - Source Classification Code
 SCRAM - Support Center for Regulatory Air Models
 SETRPC - Southeast Texas Regional Planning Commission
 SIC - Standard Industrial Classification
 SIP - State Implementation Plan
 SITWC - Spark Ignition Three-Way Catalyst
 SO₂ - Sulfur Dioxide
 SO_x - Sulfur Compounds
 SOCMI - Synthetic Organic Chemical Manufacturing Industry
 SOS - Southern Oxidants Study
 SPP - Southwest Power Pool
 SULEV - Super-Ultra-Low Emission Vehicle
 TAC - Texas Administrative Code
 TACB - Texas Air Control Board
 TAFF - Texas Alternative Fuel Fleet
 TCAA - Texas Clean Air Act
 TCEQ - Texas Commission on Environmental Quality
 TCF - Texas Clean Fleet
 TCM - Transportation Control Measure
 TERP - Texas Emission Reduction Plan
 TIP - Transportation Implementation Plan
 TMC - Texas Motorist's Choice
 TMO - Transportation Management Organization
 TNMOC - Total nonmethane organic compounds
 TNRCC - Texas Natural Resource Conservation Commission (commission)
 TPD - Tons Per Day
 TPOD - Tons Per Ozone Day

TPY - Tons Per Year
TSP - Total Suspended Particulate
TTI - Texas Transportation Institute
TxAQs - Texas 2000 Air Quality Study
TxDOT - Texas Department of Transportation
UAM - Urban Airshed Model
UHI - Urban Heat Island
USDA - United States Department of Agriculture
USGS - United States Geological Survey
UTM - Universal Transverse Mercator
VAVR - Voluntary Accelerated Vehicle Retirement
VERP - Voluntary Emission Reduction Permit
VID - Vehicle Identification Database
VIN - Vehicle Identification Number
VIR - Vehicle Inspection Report
VMAS - Vehicle Mass Analysis System
VMEP - Voluntary Mobile Source Emissions Reduction Program
VMT - Vehicle Miles Traveled
VNR or VNRAT - VOC-NO_x ratios
VOC - Volatile Organic Compound
VRF - Vehicle Repair Form
WOE - Weight of Evidence
ZEV - Zero Emission Vehicle

VI: Ozone Control Strategy

A. INTRODUCTION

This introduction is intended to provide the reader with a broad overview of the SIP revisions that have been submitted to the EPA by the State of Texas. Some sections may be obsolete or superseded by new revisions, but have been retained for the sake of historical completeness. The reader is referred to the body of the SIP for details on the current SIP revision.

Requirements for the SIP specified in 40 CFR §51.12 provide that “. . . in any region where existing (measured or estimated) ambient levels of pollutant exceed the levels specified by an applicable national standard, the plan shall set forth a control strategy which shall provide for the degree of emission reduction necessary for attainment and maintenance of such national standard.” Ambient levels of SO₂ and NO_x, as measured from 1975 through 1977, did not exceed the national standards set for these pollutants anywhere in Texas. Therefore, no control strategies for these pollutants were included in revisions to the Texas SIP submitted on April 13, 1979. Control strategies were submitted and approved for inclusion in the SIP for areas in which measured concentrations of ozone, TSP, or CO exceeded an NAAQS during the period from 1975 to 1977. On October 5, 1978, the Administrator of the EPA promulgated a lead ambient air quality standard. The FCAA Amendments of 1977 required that each state submit an implementation plan for the control of any new criteria pollutant. A SIP revision for lead was submitted in March 1981.

The control strategies submitted in 1979 provided, by December 31, 1982, the amount of emission reductions required by EPA policy to demonstrate attainment of the primary NAAQS, except for ozone, in the Harris County nonattainment area. For that area, an extension to December 31, 1987 was requested, as provided for in the FCAA Amendments of 1977.

Supplemental material, including emission inventories for VOCs and TSP submitted with the 1979 SIP revisions, is included in Appendices H and O of the 1979 SIP submittal.

Proposals to revise the Texas SIP to comply with the requirements of the FCAA Amendments of 1977 were submitted to EPA on April 13, November 2, and November 21, 1979. On December 18, 1979 (44 FR 75830-74832), EPA approved the proposed revision to the Texas SIP relating to vehicle inspection and maintenance and extended the deadline for attainment of the NAAQS for ozone in Harris County until December 31, 1987 (see Appendix Q of the 1979 SIP submittal for the full text of the extension request and the approval notice). On March 25, 1980 (45 FR 19231-19245), EPA approved and incorporated into the Texas SIP many of the remaining provisions included in the proposals submitted by the state in April and November 1979. The March 25, 1980 *Federal Register* notice also included conditional approval of a number of the proposed SIP revisions submitted by the state.

Additional proposed SIP revisions were submitted to EPA by the state on July 25, 1980 and July 20, 1981 to comply with the requirements of the March 25, 1980 conditional approvals. By May 31, 1982, all of the proposed revisions to the Texas SIP submitted to EPA in April and November 1979, July 1980, and July 1981, with the exception of provisions relating to the definition of major modification used in NSR and certain portions of the control strategy for TSP in Harris County, had been fully approved or addressed in a *Federal Register* notice proposing final approval. The NSR provisions were approved on August 13, 1984.

The FCAA Amendments of 1977 required SIPs to be revised by December 31, 1982 to provide additional emission reductions for those areas for which EPA approved extensions of the deadline for attainment of the NAAQS for ozone or CO. In 1982 the state submitted a revision to the Texas SIP to comply with the FCAA Amendments of 1977 and EPA rules for 1982 SIP revisions. Supplementary emissions inventory data and supporting documentation for the revision were included in Appendices Q through Z of the 1982 SIP submittal.

The only area in Texas receiving an extension of the attainment deadline to December 31, 1987 was Harris County for ozone. Proposals to revise the Texas SIP for Harris County were submitted to EPA on December 9, 1982. On February 3, 1983, EPA proposed to approve all portions of the plan except for the Vehicle Parameter I/M Program. On April 30, 1983, the EPA Administrator proposed sanctions for failure to submit or implement an approvable I/M program in Harris County. Senate Bill 1205 was passed on May 25, 1983 by the Texas Legislature to provide the Texas Department of Public Safety with the authority to implement enhanced vehicle inspection requirements and enforcement procedures. On August 3, 1984, EPA proposed approval of the Texas SIP pending receipt of revisions incorporating these enhanced inspection procedures and measures ensuring enforceability of the program. These additional proposed SIP revisions were adopted by the state on November 9, 1984. Final approval by EPA was published on June 26, 1985.

Although the control strategies approved by EPA in the 1979 SIP revisions were implemented in accordance with the provisions of the plan, several areas in Texas did not attain the primary NAAQS by December 31, 1982. On February 23, 1983, EPA published a *Federal Register* notice identifying those areas and expressing the intent to impose economic and growth sanctions provided in the FCAA. However, EPA reversed that policy in the November 2, 1983 *Federal Register*, deciding instead to call for supplemental SIP revisions to include sufficient additional control requirements to demonstrate attainment by December 31, 1987.

On February 24, 1984, the EPA Region 6 Administrator notified the Governor of Texas that such supplemental SIP revisions would be required within one year for ozone in Dallas, Tarrant, and El Paso Counties and CO in El Paso County. The Texas Air Control Board (TACB) requested a 6-month extension of the deadline (to August 31, 1985) on October 19, 1984. EPA approved this request on November 16, 1984.

Proposals to revise the Texas SIP for Dallas, Tarrant, and El Paso Counties were submitted to EPA on September 30, 1985. However, the revisions for Dallas and Tarrant Counties did not provide sufficient reductions to demonstrate attainment of the ozone standard and on July 14, 1987, EPA published intent to invoke sanctions. Public officials in the two counties expressed a strong desire to provide additional control measures sufficient to satisfy requirements for an attainment demonstration.

A program of supplemental controls was taken to public hearings in late October 1987. As a result of testimony received at the hearings, a number of the controls were modified and several were deleted, but sufficient reductions were retained to demonstrate attainment by December 31, 1991. These controls were adopted by the TACB on December 18, 1987 and were submitted to EPA as proposed revisions to the SIP. Supplemental data and supporting documentation are included in Appendices AA through AO of the 1987 SIP submittal.

The FCAA Amendments of 1990 authorized EPA to designate areas failing to meet the NAAQS for ozone as nonattainment and to classify them according to severity. The four areas in Texas and their respective classifications include: HGA (severe), BPA (serious), ELP (serious), and DFW (moderate).

The FCAA Amendments required a SIP revision to be submitted for all ozone nonattainment areas classified as moderate and above by November 15, 1993, which described in part how an area intends to decrease VOC emissions by 15%, net of growth, by November 15, 1996. The amendments also required all nonattainment areas classified as serious and above to submit a revision to the SIP by November 15, 1994, which described how each area would achieve further reductions of VOC and/or NO_x in the amount of 3.0% per year averaged over three years and which includes a demonstration of attainment based on modeling results using the UAM. In addition to the 15% reduction, states were also required to prepare contingency rules that would result in an additional 3.0% reduction of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x. Underlying this substitution provision is the recognition that NO_x controls may effectively reduce ozone in many areas and that the design of strategies is more efficient when the characteristic properties responsible for ozone formation and control are evaluated for each area. The primary condition to use NO_x controls as contingency measures is a demonstration through UAM modeling that these controls will be beneficial toward the reduction of ozone. These VOC and/or NO_x contingency measures would be implemented immediately should any area fall short of the 15% goal.

Texas submitted rules to meet the ROP reduction in two phases. Phase I consisted of a core set of rules comprising a significant portion of the required reductions. This phase was submitted by the original deadline of November 15, 1993. Phase II consisted of any remaining percentage toward the 15% net of growth reductions, as well as additional contingency measures to obtain an additional 3.0% of reductions. Phase II was submitted by May 15, 1994. The complete list of contingency measures was submitted by November 15, 1994. The appropriate compliance date was to be incorporated into each control measure to ensure that the required reductions would be achieved by the November 15, 1996 deadline. A commitment listing the potential rules from which the additional percentages and contingency measures were selected was submitted in conjunction with the Phase I SIP on November 15, 1993. That list of Phase II rules was intended to rank options available to the state and to identify potential rules available to meet 100% of the targeted reductions and contingencies. Only those portions of the Phase II rules needed to provide reasonable assurance of achieving the targeted reduction requirements were adopted by the commission.

The DFW and ELP areas achieved sufficient reductions with the 15% ROP SIP to demonstrate attainment by 1996. Attainment Demonstration SIP Revisions for these two areas were submitted on September 14, 1994.

The FCAA Amendments of 1990 classified the BPA area as a serious nonattainment area. The BPA nonattainment area includes Hardin, Jefferson, and Orange Counties. The BPA nonattainment area has an ozone design value of 0.16 ppm, which places the area in the serious classification.

The FCAA Amendments of 1990 required a Post-96 ROP SIP revision and accompanying rules to be submitted by November 15, 1994. According to the FCAA Amendments, this submittal had to contain an Attainment Demonstration based on UAM. Additionally, the revision had to demonstrate how the HGA and BPA nonattainment areas intended to achieve a 3% per year reduction of VOC and/or NO_x until the year 2007, and additional reductions as needed to demonstrate modeled attainment. The plan was also required to carry an additional 3% of contingency measures to be implemented if the nonattainment area fails to meet a deadline. To use NO_x reductions for all or part of the Post-96 controls or the contingency

measures required a demonstration using UAM showing that NO_x controls would be beneficial in reducing ozone.

On November 9, 1994, the state submitted a SIP revision designed to meet the 3% per year ROP requirements for the years 1997-1999. This Post-96 ROP SIP revision detailed how the BPA and HGA nonattainment areas intended to achieve these three years' reductions of VOC (or 9% net-of-growth). Most of this amount was achieved by quantifying additional reductions due to existing rules and reductions due to federally-mandated rules. Rules to achieve the further reductions needed to meet the ROP SIP goal were submitted to EPA on January 11, 1995. This submittal included modeling demonstrating progress toward attainment, using a 1999 future year emissions inventory.

On August 14, 1994, the state submitted preliminary UAM modeling results for the BPA and HGA nonattainment areas that showed the relationship between emission levels of VOC and NO_x, and ozone concentrations. This modeling was conducted with a 1999 future year emissions inventory. Based on the results of this preliminary modeling, which showed that NO_x reductions might increase ozone concentrations, on April 12, 1995 the state received a temporary §182(f) exemption from all NO_x requirements, including RACT, I/M, NO_x NSR, and transportation conformity requirements. Permanent §182(f) exemptions from all NO_x requirements were granted for DFW and ELP, and temporary exemptions until December 31, 1996 for HGA and BPA. The commission subsequently requested that EPA extend this date until December 31, 1997. EPA approved this 1-year extension on May 14, 1997.

On March 2, 1995, Mary Nichols, EPA Assistant Administrator for Air and Radiation, issued a memo which gave states some flexibility to design a phased Attainment Demonstration. It provided for an initial phase which was intended to continue progress in reducing levels of VOC and/or NO_x, while giving states an opportunity to address scientific issues such as modeling and the transport of ozone and its precursor pollutants. The second phase was designed to draw upon the results of the scientific effort and design a plan to bring the area into attainment. To constitute Phase I under this approach, the EPA guidance required that states submit the following SIP elements by December 31, 1995:

- , Control strategies to achieve reductions of ozone precursors in the amount of 3% per year from the 1990 baseline EI for the years 1997, 1998, and 1999.
- , UAM modeling through the year 1999, showing the effect of previously-adopted control strategies which were designed to achieve a 15% reduction in VOCs from 1990 through 1996.
- , A demonstration that the state has met the VOC RACT requirements of the FCAA Amendments.
- , A detailed schedule and plan for the "Phase II" portion of the attainment demonstration which will show how the nonattainment areas can attain the ozone standard by the required dates.
- , An enforceable commitment to:
 - Participate in a consultative process to address regional transport;
 - Adopt additional control measures as necessary to attain the ozone NAAQS, meet ROP requirements, and eliminate significant contribution to nonattainment downwind; and
 - Identify any reductions that are needed from upwind areas to meet the NAAQS.

Texas submitted the first two of these required sections in November 1994. The remaining three, a VOC RACT demonstration, the required commitments, and a Phase II plan and schedule, were submitted on January 10, 1996 to EPA.

ROP SIP modeling was developed for the HGA nonattainment area in two phases using the UAM. The first phase of ROP modeling was the modeling submitted in January 1995, as described above. The

second phase of the ROP modeling was conducted using data obtained primarily from the COAST project, an intensive 1993 field study. The COAST modeling for HGA and the associated SIP were projected to be completed by December 1996 for submittal in May of 1997. Control strategies developed in this second phase were planned to be based on a more robust database, providing a higher degree of confidence that the strategies would result in attainment of the ozone NAAQS or target ozone value. A discussion of the schedule for the UAM modeling for the Phase II Attainment Demonstration can be found in Appendix 11-F of the January 10, 1996 submittal.

On January 29, 1996, EPA proposed a limited approval/limited disapproval for the Texas 15% ROP SIP revision. EPA proposed a limited approval because the SIP revision would result in significant emission reductions from the 1990 baseline and would, therefore, improve air quality. Simultaneously, the EPA proposed a limited disapproval because it believed that the plan failed to demonstrate sufficient reductions to meet the 15% ROP requirements. It also proposed a limited approval/disapproval of the contingency plans (designed to achieve an additional 3% of reductions if needed because a milestone is missed) along the same lines as the 15% action. EPA stated that some of the control measures submitted along with the SIP revision did not meet all of the requirements of the FCAA Amendments of 1990 and, therefore, cannot be approved. EPA further stated that it was not making a determination at this time about whether the state had met its requirements regarding RACT, or any other underlying FCAA Amendments of 1990 requirements. Finally, EPA proposed approval of the Alternate Means of Control portion of the November 9, 1994 Post-96 SIP submittal, but did not propose action on any other portion of that submittal.

Additionally, on November 29, 1995, the President signed the National Highway Systems Designation Act, which, among other things, prohibited EPA from discounting the creditable emissions from a decentralized vehicle I/M testing program if an approvable conditional I/M SIP revision was submitted to EPA within 120 days of the bill's signature. EPA's Office of Mobile Sources issued guidance stating that it would accept an interim I/M SIP proposal and Governor's letter 120 days after signature of the bill in lieu of an adopted SIP revision. The SIP proposal and letter was submitted to the EPA prior to the March 27, 1996 deadline to meet the 120-day time frame. The final I/M SIP revision (Rule Log No. 96104-114-AI), commonly referred to as the "Texas Motorist's Choice Program," was adopted by the commission on May 29, 1996 and submitted to the EPA by the state on June 25, 1996. On October 3, 1996, EPA proposed (61 FR 51651-51659) conditional interim approval of the Texas Motorist's Choice Program based upon the state's good faith estimate of emission reductions and the program's compliance with the Clean Air Act.

Part of EPA's determination that the new I/M SIP is approvable depends on the program's ability to achieve sufficient creditable VOC reductions so that the 15% ROP can still be achieved. The commission designed the revised I/M program to fit in with the other elements of the 15% SIP to achieve the full amount of creditable reductions required. The I/M program also achieves creditable reductions for the Post-96 ROP SIP.

Changes to the I/M program have had an impact on the ELP §818 Attainment Demonstration as well. This demonstration was predicated on the assumption that the I/M program would be implemented as adopted for the 15% SIP. An addendum to the §818 Demonstration shows that the basic underlying assumptions of the modeling still pertain despite the revisions to the I/M program.

The ETR program revision to the SIP and ETR rule were adopted in October 1992 by the TACB to meet the mandate established in the FCAA Amendments of 1990 (§182(d)(1)(B)). This section of the FCAA

required states with severe or extreme ozone nonattainment areas to develop and implement ETR programs in those areas. For Texas, the only area affected was the HGA area. The ETR program required large employers (those with 100 or more employees) to implement trip reduction programs that would increase the average passenger occupancy rate of vehicles arriving at the workplace during the peak travel period by 25% above the average for the area.

Congress amended the FCAA in December of 1995 by passing House Rule 325. This amendment allows the state to require an ETR program at its discretion. It also allows a state to "remove such provisions (ETR programs) from the implementation plan . . . if the state notifies the Administrator, in writing, that the state has undertaken, or will undertake, one or more alternative methods that will achieve emission reductions (1.81 tons/day) equivalent to those achieved by the removed . . . provisions." As such, large employers will no longer be mandated to implement trip reduction programs. The HGA ozone nonattainment area will, however, through the coordination of the Houston-Galveston Area Council, implement a voluntary regional initiative to reduce vehicle trips.

The 1990 Adjusted Base Year EI was submitted on November 12, 1993. It is the official inventory of all emission sources (point, area, on-road and non-road mobile) in the four nonattainment areas. There have been several changes to the EI due to changes in assumptions for certain area and non-road mobile source categories. Changes to the baseline EI have affected the target calculations and creditable assumptions made in the 15% and 9% SIPs.

In December of 1990, then-Texas Governor William Clements requested that the BPA area be reclassified as a "moderate" ozone nonattainment area in accordance with §181(a)(4) of the FCAA Amendments of 1990. That request was denied on February 13, 1991. A recent review of the original request and supporting documentation has revealed that this denial was made in error. As provided by §110(k)(6) of the Act, the EPA Administrator has the authority to reverse a decision regarding original designation if it is discovered that an error had been made.

Monitoring data from a privately-funded, special purpose monitoring network which was not included in the Aerometric Information Retrieval System database was improperly used to deny this request. Furthermore, subsequent air quality trends demonstrated that BPA is more properly classified as a moderate nonattainment area, and could attain the standard by the required date for moderate areas of November 15, 1996. Therefore, Governor Bush sent a letter and technical support to EPA on July 20, 1995, requesting that the BPA area be reclassified to moderate nonattainment status. BPA planned to demonstrate attainment one of the following ways:

- , Monitored values showing attainment of the standard at state-operated monitors for the years 1994-1996, which is the time line the FCAA Amendments of 1990 specifies for moderate areas.
- , UAM modeling showing attainment of the standard but for transport of ozone and/or precursors.

EPA Region 6 verified the data submitted in support of this request and concurred that it is valid. On June 3, 1996, the reclassification of the BPA area became effective. Because the area was classified as serious, it was following the SIP submittal and permitting requirements of a serious area, which included the requirements for a Post-96 SIP. With the consolidated SIP submittal, the commission removed the BPA area from the Post-96 SIPs, which became applicable to the HGA nonattainment area only.

The State of Texas, in a committal SIP revision submitted to EPA on November 15, 1992, opted out of the Federal Clean Fuel Fleet program in order to implement a fleet emission control program designed by

the state. In 1994, Texas submitted the state's opt-out program in a SIP revision to the EPA and adopted rules to implement the TAFF program. In 1995, the 74th Texas Legislature modified the state's alternative fuels program through passage of SB 200. In response to SB 200, the commission adopted regulations modifying the TAFF program to create the TCF program.

Since adoption on July 24, 1996 and subsequent submission to EPA of the TCF SIP revision, the 75th Texas Legislature modified the state's alternative program once again through passage of SB 681. Staff modified the TCF program, now called the TCF Low Emission Vehicle program, to reflect changes mandated by SB 681.

On June 29, 1994, the commission adopted a revision to the SO₂ SIP regarding emissions in Harris County. The SIP revision was required by EPA because of exceedances of the SO₂ NAAQS in 1986, 1988, and 1990. An EPA study conducted by Scientific Applications International Corporation also predicted SO₂ exceedances. On April 22, 1991, the EPA declared that portions of Harris County were potentially in nonattainment of the SO₂ NAAQS. Consequently, the HRM Corporation volunteered to find reductions in SO₂ in order to prevent being redesignated to nonattainment. HRM's efforts resulted in finding voluntary SO₂ reductions. These reductions were adopted in 13 commission Agreed Orders and were included as part of the June 29, 1994 SIP revision. The EPA approved the Harris County SO₂ SIP on March 6, 1995 (60 FR 12125).

On May 14, 1997, the commission adopted an additional revision to the Harris County SO₂ SIP to incorporate modifications to two of the 13 commission Agreed Orders. The remaining sections of the SIP remained the same. While on the scale of "minor technical corrections," the modified orders were submitted as a SIP revision because the new emission rates differ from what EPA had previously approved. The two Agreed Order modifications concerned grandfathered units at Simpson Pasadena Paper Company and Lyondell-Citgo Refining Company, Ltd. The commission approved changes to both Agreed Orders on July 24, 1996.

On May 14, 1997, the commission also adopted a revision to the SIP modifying the vehicle I/M program. This revision removed the test-on-resale component that had been included in the vehicle I/M program, as designed in July of 1996. Test-on-resale required persons selling their vehicles in the I/M core program areas to obtain emissions testing prior to the title transfer of such vehicles. Test-on-resale was not required to meet the FCAA Amendments of 1990 and did not produce additional emissions reduction benefits. The SIP revision also incorporated into the SIP the Memorandum of Understanding between the commission and the Department of Public Safety, adopted by the commission on November 20, 1996.

The FCAA Amendments of 1990 required that, for severe and above ozone nonattainment areas, states develop SIP revisions that include specific enforceable TCMs, as necessary, to offset increases in motor vehicle emissions resulting from growth in VMT or the number of vehicle trips. This SIP revision would also satisfy reductions in motor vehicle emissions consistent with the 15% ROP and the Post-1996 ROP SIPs.

Therefore, the commission developed and submitted to EPA a committal SIP revision for the HGA nonattainment area on November 13, 1992, and VMT Offset SIP revisions on November 12, 1993 and November 6, 1994, to satisfy the requirements of the 15% ROP SIP revision. The former SIP revision laid out a set of TCMs and other mobile source controls which reduced emissions below the modeled ceiling. The 1994 SIP revision did not require additional TCMs.

As a result of changes in the I/M and the ETR programs, it was necessary to do the 1997 VMT Offset SIP revision for the HGA area, which was adopted on August 6, 1997. Additional TCMs were included: high occupancy vehicle lanes, park and ride lots, arterial traffic management systems, computer transportation management systems, and signalization. These TCMs were part of the “Super SIP” submitted to EPA on July 24, 1996.

Using the best technical guidance and engineering judgement available at the time, the State of Texas calculated emissions reductions available from the enhanced monitoring rule that was to be part of the Title V permitting program. The enhanced monitoring rule was later revised and transformed into the CAM Rule. Texas maintained that its calculation methodologies still accurately reflected the amount of creditable reductions available. EPA disagreed with the calculation methodologies used by the state and intends to disapprove the 9% SIP as a result. EPA also indicated that the emission reduction credits claimed for the Texas Clean Fuels Fleet program were not approvable due to a legislative change to the program. The state plans to submit a SIP revision for this program in a separate action, but has removed the credits claimed in the 9% SIP in this action. The State of Texas proposed to submit a revision to the 9% SIP which revises the reductions claimed by the state toward the 9% emissions target.

The State of Texas did not reapply for an extension of the NO_x §182(f) waivers for HGA and BPA as discussed previously. Therefore, on December 31, 1997, the waivers expired. The state is now required to implement several NO_x control programs. Among them is a requirement for all major NO_x sources within the area to implement RACT. The state has adopted a revised compliance date of November 15, 1999 for this program.

The commission, in a committal SIP revision adopted on June 3, 1998, and submitted to EPA on June 23, 1998, agreed to implement OBD checks as part of the I/M program by the federal deadline of January 1, 2001.

On July 29, 1998, the commission adopted regulations and a revision of the TCF SIP to set forth the LEV requirements for mass transit fleets in each of the serious and above nonattainment areas, and for local government and private fleets operated primarily within the serious and above nonattainment areas. These rules satisfy the state requirements to adopt rules to implement SB 681.

The DFW area was classified as a moderate ozone nonattainment area in accordance with the FCAA Amendments of 1990. As a moderate nonattainment area, DFW was to demonstrate, through monitoring, attainment of the 1-hour ozone standard by November 15, 1996, or face being “bumped up” to the serious classification. Air quality data from DFW ambient air quality monitors for the years 1994-96 show that the 1-hour NAAQS for ozone has been exceeded more than one day per year over this three-year period. On February 18, 1998, the EPA issued a final notice in the *Federal Register* that the DFW area was being reclassified to the serious classification for failing to attain the NAAQS for ozone. As a result of this reclassification, the EPA required that a new SIP demonstrating attainment of the ozone standard in DFW be submitted by March 20, 1999. The state submitted a SIP for DFW that included photochemical modeling showing the level of reductions needed to attain the standard by 1999, a 9% ROP target calculation for the years 1997-99, VOC RACT rules in Chapter 115 applicable to sources meeting the 50 tpy major source level, NO_x RACT rules in Chapter 117 applicable to major sources of NO_x, and amendments to Chapter 116 reinstating nonattainment new source review for NO_x. The governor submitted this SIP to EPA on March 16, 1999. Because there was not enough time to implement the rules to achieve necessary reductions of ozone precursor emissions in the DFW area by the required attainment

date of November 15, 1999, the state proposed to submit in March 2000 a full attainment demonstration including a complete rule package necessary to attain the 1-hour ozone standard.

On February 24, 1999 the commission adopted a SIP revision for the DFW area which was submitted to EPA on March 16, 1999. This SIP was not only intended to demonstrate how the DFW area would attain the standard through the submission of an updated emissions inventory and photochemical modeling, but to also include a 9% ROP target calculation in order to satisfy EPA's requirement of reasonable further progress in emission reductions for the DFW area for the years 1997-99. The reductions toward ROP were short of the 9% target and the SIP lacked required modeled control strategies; therefore, a follow-up SIP was developed. More information about the follow-up submittal is addressed later in this introduction.

On May 12, 1999 the commission adopted a revision to the SIP for the Northeast Texas region which would make certain local ozone precursor emission reductions federally enforceable. This revision was submitted to EPA on June 4, 1999. Four affected companies (Norit Americas, Inc.; La Gloria Oil and Gas Company; Eastman Chemical Company, Texas Eastman Division; and ARCO Permian) in the Northeast Texas region voluntarily agreed to be subject to the implementation of enforceable emission reduction measures pursuant to Part A, Sections 2-5 of the Northeast Texas Flexible Attainment Region (FAR) Memorandum of Agreement. The FAR approach allows time for the area's control program to work, similar to contingency measures in a post-1990 maintenance agreement, prior to EPA issuing a call for a SIP revision or nonattainment redesignation. The MOA required the immediate implementation of control measures through the use of Agreed Orders, which are included in the SIP revision to make them federally enforceable.

On June 30, 1999 the commission adopted a revision to the SIP in order to incorporate cleaner gasoline rules. The cleaner gasoline is required to have a lower RVP outside the DFW and HGA areas, and a limit on the amount of sulfur in each gallon of gasoline. The RVP required in this SIP revision is 7.8 psi starting May 1, 2000. The RVP limit would be in effect every summer from May 1st through October 1st. A 7.8 psi RVP fuel is expected to reduce evaporative emissions from automobiles, off-highway gasoline powered equipment, and all gasoline storage and transfer operations. Evaporative VOC emissions from automobiles will be reduced by at least 14%. The sulfur cap requirement is 150 ppm per gallon of gasoline, starting January 1, 2004. Low sulfur gasoline is expected to reduce NO_x emissions from today's cars by 8.5% according to the EPA complex model. The rules would further provide for counties or large cities to opt into these regulations earlier than required provided that certain conditions are met. If EPA were to adopt sulfur regulations to require compliance by January 1, 2004, the commission's rules would no longer apply, allowing the federal sulfur rules to take precedence. However, areas that choose to opt-in early would continue to follow the sulfur requirements of their early compliance plan until EPA actually implemented its regulations, unless otherwise specified in the commission order.

On July 28, 1999 the commission adopted a site-specific revision to the SIP which provides for the redesignation to attainment of that portion of Collin County currently designated as nonattainment for the lead NAAQS. The revision also provides a maintenance plan for the area to ensure continued compliance. As part of the maintenance plan, the revision establishes a new contingency plan through an agreed order and replaces Agreed Board Orders 92-09(k) and 93-12 and Board Order 93-10. The revision also provides for a commitment by the commission to keep the existing monitoring network in place until the end of the maintenance period.

On October 15, 1999 the commission adopted a revision to the SIP for the DFW ozone nonattainment area. This SIP was developed in order to address the shortfall in the reductions toward the 9% ROP target and the lack of modeled control strategies from the February 24, 1999 revision. Potential emission reduction credits were reviewed that were not claimed in the February 1999 SIP in order to make up the ROP shortfall. The focus was on VOC reductions because fewer VOC reductions would be needed to make up the shortfall compared to NO_x emission reductions. The ROP lacked about 20% of the VOC reductions needed, which amounted to 5.87 tpd. Making the 9% TOP portion of the SIP complete should allow certain transportation projects to avoid being put on hold. Elements have been identified that were not previously considered that would bring SIP emission reduction credits in order to complete the 9% TOP requirements for the years 1996-99. These technical corrections were included in the October 1999 revised SIP.

In November 1998, the H.A. SIP revision submitted to EPA in May 1998 became complete by operation of law. However, EPA stated that it could not approve the SIP until specific control strategies were modeled in the attainment demonstration. EPA specified a submittal date of November 15, 1999 for this modeling. As the H.A. modeling protocol evolved, the state eventually selected and modeled seven basic modeling scenarios. As part of this process, a group of H.A. stakeholders worked closely with commission staff to identify local control strategies for the modeling. This modeling showed a gap in reductions necessary for attainment of the 1-hour ozone standard. The commission adopted these revisions to the SIP on October 27, 1999.

In January 1997 the commission proposed a program that, for the first time in Texas' air pollution control history, extended beyond the confines of the urbanized areas. The concept of the regional strategy was developed as a result of several major occurrences. These events include the COAST Study, participation in the OTAG process, deployment of intensive aircraft monitoring by Baylor University, and the development of regional photochemical modeling. While Texas was not involved in the OTAG SIP call requiring mandatory statewide NO_x reductions, the commission realized the importance of the role of transported ozone and/or its precursors and the need for a statewide comprehensive plan in order to assist the areas that are struggling to attain the ozone standard. The impact on several states from the smoke and haze episodes from fires in Central America during the summer of 1998 helped reinforce the fact that air pollution is capable of traveling hundreds of miles.

The purpose of the regional strategy is to reduce ozone causing compounds in the eastern half of the state in order to help reduce background levels of ozone in both non attainment areas as well as those areas close to a noncompliance for the new 8-hour ozone standard. Components of the regional strategy included support for the NLEV program, cleaner burning gasoline and stage. I vapor recovery, voluntary involvement in the permitting of grand fathered facilities, and reductions from major stationary sources.

On July 16, 1998, EPA issued a guidance memorandum titled "Extension of Attainment Dates for Downwind Transport Areas." The guidance, referred to hereinafter as the "transport guidance," provides a means for EPA to extend the attainment date for an area affected by transported air pollution, without reclassifying ("bumping up") the area to a higher classification. The transport guidance is particularly relevant to B.A., which is downwind of the H.A. area and is affected by transport from H.A. If EPA approved such a determination for B.A., the area would have until no later than November 15, 2007, the attainment date for H.A., to attain the 1-hour ozone standard. There is also mounting technical data which suggests that the DFW area is impacted by transport and high regional background levels of ozone. A modeling demonstration has been developed and shows that the air quality in the DFW area is influenced at times from the H.A. area. This demonstration, if approved by the EPA, would allow EPA to

determine that the area should not be bumped up from serious to severe under the conditions of the July 16, 1998 transport guidance. If approved by the EPA the new attainment date for the DFW area would be no later than November 15, 2007, the attainment date for HGA.

As a result of the transport demonstrations for BPA and DFW, the development of SIPs in Texas will be, for the first time ever, on a coordinated timeline. This coordinated planning effort will include three of the state's four 1-hour ozone nonattainment areas as well as future 8-hour ozone areas. While there is uncertainty with the 8-hour ozone standard due to a pending court case, EPA's original plan calls for designations of 8-hour areas in 2000, SIP submittals by 2003, and attainment of the 8-hour standard by 2007. This statewide comprehensive planning with 2007 as a target date will allow Texas to utilize its resources in the most efficient manner to develop control strategies to reduce air pollution not only in the urbanized areas but regionally as well.

The challenges associated with reducing pollution levels to comply with the federal standards are very great, especially in the state's two largest urban areas - DFW and HGA. Commission staff worked very closely with local entities to develop recommendations that will get the respective areas into attainment. Future attainment relies on not only the development of local and state control measures, but on future federal rules involving new technologies as well. These especially involve cleaner fuels and cleaner engines for both on-road as well as non-road mobile sources. Unfortunately, many of these federal measures will not be available until the 2004 time frame and then time will be required to provide for turnover before they will become effective at reducing pollution levels. This would make it very difficult for any large urban nonattainment area to comply before the 2007 time frame. As a result of federal measures, state regulations, and local initiatives it is estimated that emissions in the eastern and central part of the state that contribute to the production of ground level ozone will be reduced by approximately 100 tpd by 2001; approximately 1200 tpd by 2003; approximately 1400 tpd by 2005; and approximately 1500 tpd by 2007. Texas is committed to implementing these strategies as quickly as practicable.

In the April 2000 SIP revision for HGA the state made the following enforceable commitments: 1) to quantify the shortfall of NO_x reductions needed for attainment; 2) to list and quantify potential control measures to meet the shortfall of NO_x reductions needed for attainment; 3) to adopt the majority of the necessary rules for the HGA attainment demonstration by December 31, 2000, and to adopt the rest of the rules as expeditiously as practical, but no later than July 31, 2001; 4) to submit a Post-99 ROP analysis by December 31, 2000; 5) to perform a mid-course review by May 1, 2004; and 6) to perform new mobile source modeling, using MOBILE6, within 24 months of the model's release. In addition, if a transportation conformity analysis is to be performed between 12 months and 24 months after the MOBILE 6 release, transportation conformity will not be determined until Texas submits an MVEB which is developed using MOBILE 6 and which the EPA finds adequate. Finally, if any of the measures adopted in the SIP pertain to motor vehicles, the commission commits to recalculate and resubmit a MVEB by December 31, 2000.

The BPA area is classified as moderate, and therefore was required to attain the 1-hour ozone standard by November 15, 1996. The BPA area did not attain the standard by that date, and also did not attain the standard by November 15, 1999, the attainment date for serious areas. In determining the appropriate attainment date for an area, EPA may consider the effect of transport of ozone or its precursors from an upwind area which interferes with the downwind area's ability to attain. On April 16, 1999, EPA proposed in the *Federal Register* to allow BPA to take advantage of the transport guidance if an approvable attainment demonstration is submitted by November 15, 1999. The SIP revision, adopted by

the commission on October 27, 1999 and submitted to EPA by November 15, 1999, contained results of photochemical modeling demonstrating transport from HGA to BPA, and, following EPA's transport guidance, demonstrating that BPA attains the 1-hour ozone standard. In addition, the November 1999 SIP revision contained adopted rules for IWW and batch process sources to ensure that VOC emission limits for these sources meet EPA's guidelines for RACT. Furthermore, the SIP revision included adopted rules establishing NO_x RACT emission limits for gas-fired, lean-burn stationary internal combustion engines. These NO_x rules represented "Phase I" of a two-part revision to the BPA attainment demonstration SIP.

The April 2000 SIP revision represented "Phase II" of the BPA attainment demonstration SIP, and contained adopted rules specifying NO_x emission limits for electric utility boilers, industrial boilers, and industrial process heaters. In accordance with EPA guidance, implementation of these NO_x emission limits represented a reasonable level of control, necessary for an approvable attainment demonstration. Modeling of these Phase II reductions showed that the BPA area attains the 1-hour ozone standard, using WOE analyses.

The DFW area's attainment deadline as a serious ozone nonattainment area was November 15, 1999.

In March 1999 the state submitted an attainment demonstration to EPA, however this SIP submittal did not contain the necessary rules to bring the DFW area into attainment by the November 1999 deadline. As a result, EPA issued a letter of findings that the March 1999 submittal was incomplete. This finding triggered a 18-month sanctions clock effective May 13, 1999.

The state now has been mounting technical data suggesting that DFW is significantly impacted by transport and regional background levels of ozone. The reductions from the strategies needed for the H.A. area and the regional rules discussed are a necessary and integral component in the strategy for DFW's attainment of the 1-hour ozone standard. The April 2000 SIP contained a modeling demonstration which showed that the air quality in the DFW area is influenced at times from the H.A. area. This demonstration, if approved by EPA, would allow EPA to determine that the DFW area should not be bumped up to a more severe classification. It would also allow DFW to have until no later than November 15, 2007, the attainment date for H.A., to reach attainment.

In order to develop local control strategy options to augment federal and state programs, the DFW area established a North Texas Clean Air Steering Committee made up of local elected officials and business leaders. Specific control strategies were identified for review by technical subcommittee members. In addition, the NCTCOG hired an environmental consultant to assist with the analysis and evaluation of control strategy options. The consultant was responsible for presenting the findings of the technical subcommittees to the NCTCOG air quality policy and steering committees for final approval prior to being submitted to the state. A WOE argument was developed for DFW consisting of several elements which, taken together, formed a compelling argument that attainment will be achieved by 2007.

The commission adopted the DFW Attainment Demonstration SIP on April 19, 2000. The SIP submittal contained the following elements: 1) photochemical modeling of specific control strategies and future state and national rules for attainment of the 1-hour ozone standard by November 15, 2007; 2) a modeling demonstration that shows that the air quality in the DFW area is influenced at times by transport from the H.A. area; 3) control strategies selected and developed by the NCTCOG and the state; 4) transportation conformity MVEBs for NO_x and VOC; and 5) a commitment to perform and submit a mid-course review by May 2004.

In a further revision of the DFW SIP on May 23, 2001, the commission repealed the airport GSE rule for the DFW area because agreed orders were signed with the area's major airlines, airports, and governmental entities to achieve the same NO_x reductions that would have been achieved by the rule.

On April 19, 2000 the state adopted a revision to the Northeast Texas FAR SIP. The Flexible Attainment Region Agreement requires that contingency measures be implemented as a result of exceedances of the National Ambient Air Quality Standard for ozone. As outlined in the FAR Action Plan under Part B, Contingent Measures, in the event of a subsequent violation the SIP must be revised to include quantifiable and enforceable control measures. Through the use of Agreed Orders these measures were adopted and included in the Northeast Texas FAR SIP to make them federally enforceable.

The commission adopted a revision to the I/M SIP on April 19, 2000 that includes onboard diagnostics checks and ASM test equipment and extends the program to all four of the core counties of the DFW ozone nonattainment area and five surrounding counties. On December 6, 2000, the commission adopted a revision to the I/M SIP that extends the program to the entire 8-county HGA ozone nonattainment area. The revision also incorporated program changes that apply in all I/M program areas.

On May 3, 2000 the state adopted a revision to the TCM and VMT portions of the SIP. This revision required TCM project-specific descriptions and estimated emissions reductions to be included in the SIP and allowed nonattainment area MPOs to substitute TCMs without a SIP revision if the substitution results in equal or greater emission reductions.

The commission adopted the HGA Post-1999 ROP and Attainment Demonstration SIP on December 6, 2000. The December 2000 submittal contained the following elements: 1) rules and photochemical modeling analyses in support of the HGA ozone attainment demonstration; 2) post-1999 ROP plans for the milestone years 2002 and 2005, and for the attainment year 2007; 3) transportation conformity MVEBs for NO_x and VOC; 4) enforceable commitments to implement further measures in support of the HGA attainment demonstration; and 5) a commitment to perform and submit a mid-course review by May 2004.

In order for the state to have an approvable attainment demonstration, the EPA indicated that the state needed to adopt those strategies modeled in the November 1999 SIP submittal, and then adopt sufficient measures to close the remaining gap in NO_x emissions. The modeling indicated an emissions gap such that an additional 91 tpd of NO_x reductions was necessary for an approvable attainment demonstration. The HGA nonattainment area needs to ultimately reduce NO_x by more than 750 tpd to reach attainment with the 1-hour ozone standard. In addition, a VOC reduction of about 25% will also have to be achieved.

The September 2001 SIP revision for the HGA ozone nonattainment area included the following elements: 1) corrections to the ROP table/budget for the years 2002, 2005, and 2007 due to a mathematical inconsistency; 2) incorporation of a change to the idling restriction control strategy clarifying that the operator of a rented or leased vehicle is responsible for compliance with the requirements of Chapter 114 in situations where the operator of a leased or rented vehicle is not employed by the owner of the vehicle (the commission committed to making this change when the rule was adopted in December 2000); 3) incorporation of revisions to the clean diesel fuel rules to provide greater flexibility in complying with the requirements of the rule while preserving the emission reductions necessary to demonstrate attainment in the HGA area; 4) incorporation of a stationary diesel engine rule that was developed as a result of the state's analysis of EPA's reasonably available control measures; 5)

incorporation of revisions to the point source NO_x rules; 6) incorporation of revisions to the emissions cap and trade rules; 7) the removal of the construction equipment operating restriction and the accelerated purchase requirement for Tier 2/3 heavy duty equipment; 8) the replacement of these rules with the Texas Emission Reduction Plan program; 9) the layout of the mid-course review process which details how the state will fulfill the commitment to obtain the additional emission reductions necessary to demonstrate attainment of the 1-hour ozone standard in the HGA area; and 10) replacement of 2007 Rate of Progress MVEBs to be consistent with the attainment MVEBs.

In August 2001 the DFW SIP, in accordance with SB 5, was revised to remove two rules submitted with the area's attainment demonstration SIP in 2002: 1) operating restrictions for construction and industrial equipment and 2) accelerated purchase of Tier 2/3 heavy-duty diesel equipment. The SIP revision stated that the diesel emission reduction incentive program contained in SB 5 would replace the above-referenced rules and result in reductions in excess of the reductions expected from the repealed rules. The SIP stated that the NO_x reductions previously claimed in the DFW attainment demonstration SIP would be achieved through an alternate but equivalent federally enforceable mechanism.

In June 2002 the commission proposed to revise the HGA SIP, partly as the result of a legal challenge of the 90% NO_x reduction requirement for stationary sources in HGA. A court order required the commission to perform an analysis of the causes of rapid ozone formation events and to identify potential mitigating measures not yet identified in the HGA attainment demonstration. The scientific study conducted by the commission showed that highly-reactive VOCs play a significant role in this rapid ozone formation and were previously under reported in the December 2000 H.A. SIP. This study concluded that controlling industrial highly-reactive VOC emissions is necessary to reduce ozone concentrations. Additional analyses provide a directional indication that it may be possible to achieve the same level of air quality benefits with reductions in industrial highly reactive VOC emissions, combined with an 80% reduction in NO_x emissions from industrial sources, as would be realized solely with a 90% reduction in industrial NO_x emissions. In light of these findings and in compliance with the court order, in June 2002 the commission proposed new rules to reduce emissions of certain highly-reactive VOCs from four key industrial sources: fugitives, flares, process vents, and cooling towers. The commission also proposed a revision to the speed limit strategy, and the development of the energy efficiency program and the protocol for the TERP program through EPA's Economic Incentive Program.

Background on the Current Revision

This SIP revision addresses three elements of the SIP:

- (1) Revision of the NO_x control strategy for cement kilns as the result of a settlement agreement with two affected industries. The commission has adopted a revision of the associated rules in Chapter 117.
- (2) Incorporation of the energy efficiency measures contained in the SIP.

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CHAPTER 1: GENERAL

1.1 BACKGROUND

The DFW area was classified as a moderate ozone nonattainment area in accordance with the FCAA Amendments of 1990. As a moderate nonattainment area, DFW was required to demonstrate attainment of the 1-hour ozone standard by November 15, 1996. A SIP was submitted based on a VOC-only strategy. Air quality data from the DFW area ambient air quality monitors from the years 1994-96 showed that the 1-hour NAAQS for ozone was exceeded more than one day per year over this three-year period.

As a result, the EPA reclassified the DFW area from moderate to serious, effective March 20, 1998, for failing to monitor attainment of the 1-hour ozone standard by the November 1996 deadline. The EPA required that a serious area SIP revision addressing attainment of the standard be submitted by March 20, 1999. The photochemical modeling investigated the effectiveness of both VOC and NO_x reductions for reducing ground-level ozone. The modeling results indicated that a combination of both NO_x and VOC reductions is most effective at reducing ozone levels in the DFW area. Previous modeling results submitted to the EPA in 1994 indicated that attainment of the standard could be reached by VOC reductions alone. The DFW area applied for and was granted a waiver from §182(f) of the FCAA, regarding NO_x reductions, on November 28, 1994. Because EPA's approval of this waiver was conditional on future photochemical modeling showing that NO_x reductions contribute toward attainment in the DFW area, submittal of this modeling resulted in EPA rescinding the NO_x waiver and reinstating the NO_x requirements for DFW, effective June 21, 1999. A SIP was submitted to the EPA on March 18, 1999 that contained a 9% ROP target calculation and emission reductions toward satisfying EPA's requirement of reasonable further progress for the DFW four-county nonattainment area for the years 1997-99. In addition, the SIP contained photochemical modeling showing the level of reductions needed to attain the standard by 1999. The modeling indicated that reductions of NO_x would be needed to attain the standard. Therefore, the following rules were developed and included in the SIP:

- RACT for NO_x
- Nonattainment NSR for NO_x
- Fix-ups from the change in the major source threshold for RACT for VOCs

The commission indicated to the EPA and the local area that, due to time constraints, the March 1999 SIP would not have the rules necessary to bring the DFW area into attainment by the November 1999 deadline and that a complete attainment demonstration would be submitted in the spring of 2000. As a result, the EPA issued a letter of findings that the February 1999 SIP was incomplete, which triggered an 18-month sanctions clock effective May 13, 1999.

The attainment deadline for serious areas is November 15, 1999. Because of numerous 1-hour ozone exceedances in 1997, 1998, and 1999, it was not possible for the DFW area to attain the standard by that deadline. There is mounting technical data suggesting that DFW is significantly impacted by transport and regional background levels of ozone. The reductions from the strategies needed for the HGA area and the regional rules are a necessary and integral component in the strategy for DFW's attainment of the 1-hour ozone standard.

In order to develop local control strategy options to augment federal and state programs, the DFW area established a North Texas Clean Air Steering Committee made up of local elected officials and business leaders. Specific control strategies were identified for review by technical subcommittee members. In

addition, the NCTCOG hired an environmental consultant to assist with the analysis and evaluation of control strategy options. The consultant was responsible for presenting the findings of the technical subcommittees to the NCTCOG air quality policy and steering committees for final approval prior to being submitted to the state.

On April 19, 2000, the commission adopted a SIP revision and associated rules for the DFW ozone attainment demonstration. The SIP revision contained the following control strategy elements:

- Federal and State measures to be implemented by 2007 (12 counties)
 - < On-road mobile source standards:
 - Federal Phase II reformulated gasoline (RFG)
 - Tier 2 vehicle emission standards
 - Federal low sulfur gasoline (30 ppm)
 - National low emission vehicles (NLEV)
 - Heavy-duty diesel standards
 - < Non-road mobile source standards:
 - Lawn and garden equipment
 - Tier 3 heavy-duty diesel equipment
 - Locomotives
 - Standards for compression ignition vehicles and equipment
 - Standards for spark ignition vehicles and equipment
 - Recreational marine standards
 - < Point Sources:
 - SB 7 mandated that grandfathered EGFs in central and eastern Texas reduce emissions by 50% of 1997 levels
 - Sources identified as grandfathered were reduced by 30%, while sources identified as permitted were not reduced. Sources whose status could not be determined were reduced by the average (weighted) value of 13%. This is included as part of the Weight-of Evidence Analysis.
 - Emissions from EGFs in the remainder of the state are also to be reduced by 30%.
 - In Oklahoma, Arkansas, Louisiana, Mississippi, and Florida, a reduction of 30% from 1996 emission levels was assumed for all point source NO_x to reflect national trends toward lowered emissions. In Georgia, Missouri, Kentucky and Tennessee, NO_x emissions were reduced by 59% from 1996 levels to reflect reductions expected under EPA's NO_x SIP Call. This is included as part of the Weight-of Evidence Analysis.

In addition, the following controls were endorsed and recommended by the North Texas Clean Air Steering Committee. While the commission took all recommendations from the North Texas Clean Air Steering Committee very seriously, some control strategies were modified from the Committee's recommendations due to technical and other constraints.

- Electric generating facilities reduced up to 88% with use of episodic control technologies
- Up to 50% NO_x reductions in Ellis County from controls on cement kilns

- ASM including VMAS with integrated OBD I/M test with increased enforcement
- Remote sensing to detect high emitting vehicles
- Vehicle recycling
- Transportation control measures
- Travel demand management, such as van pool, park and ride
- Voluntary incentive program for off-road and on-road diesel vehicles
- California diesel
- Airport electrification standards and operations management with state or local control
- Voluntary non-road mobile emission reduction program
- Energy conservation efforts for buildings which includes 2000 International Energy Conservation Code (IECC), and low-NO_x water heaters
- California large spark ignition (LSI) engines (> 25 hp)
- A 5 mph speed limit reduction from currently existing 70 and 65 mph posted limits

A complete description of the control strategies is presented in Chapter 6 of this SIP.

The April 19, 2000 SIP contained the following elements:

- , Photochemical modeling of specific control strategies and future state and national rules for attainment of the 1-hour ozone standard in the DFW area by the attainment deadline of November 15, 2007.
- , A modeling demonstration that shows that the air quality in the DFW area is influenced at times by transport from the HGA area.
- , Identification of the level of reductions of VOC and NO_x emissions necessary to attain the 1-hour ozone standard by 2007.
- , Control strategies developed by the State involving controls on stationary sources.
- , Control strategies selected by the NCTCOG North Texas Clean Air Steering Committee.
- , A 2007 mobile source budget for transportation conformity.
- , A commitment to perform and submit a mid-course review by May 1, 2004.

This attainment demonstration SIP, if approved by the EPA, would allow EPA to determine that the DFW area should not be bumped up from serious to severe under the conditions of a transport policy published in the *Federal Register* on July 16, 1998. The new attainment date for the DFW area would be no later than November 15, 2007, the attainment date for HGA.

In this same SIP revision, the commission repealed the airport GSE rule for the DFW area because agreed orders were signed with the area's major airlines, airports, and governmental entities to achieve the same NO_x reductions that would have been achieved by the rule.

In August 2001 the commission adopted revisions to the DFW SIP which repealed two of the rules adopted on April 19, 2000 as part of the control strategy for the DFW ozone attainment demonstration. The first rule restricted the use of construction and industrial equipment (non-road, heavy-duty diesel equipment rated at 50 hp and greater). The second rule required the replacement of diesel-powered construction, industrial, commercial, and lawn and garden equipment rated at 50 hp and greater to with newer Tier 2 and Tier 3 equipment, with the amount and timing of reductions depending on the hp rating of the engine fleet. These repeals were required by SB 5, passed by the 77th Legislature of the State of Texas in May 2001. This legislative requirement was implemented by submitting the rule repeals to EPA as a SIP revision. The diesel emission reduction incentive program contained in SB 5 will replace the above-referenced rules and result in reductions in excess of the reductions expected from the rules that are being repealed. Therefore, the NO_x reductions previously claimed in the DFW attainment demonstration SIP will be achieved through an alternate but equivalent federally enforceable mechanism.

The current SIP revision addresses three elements of the SIP:

- (1) Revision of the NO_x control strategy for cement kilns as the result of a settlement agreement with two affected industries. The commission has adopted a revision of the associated rules in Chapter 117.
- (2) Expansion of the energy efficiency measures contained in the SIP.

1.2 PUBLIC HEARINGS INFORMATION

The commission held public hearings at the following times and locations:
Arlington, Texas at 1:30 p.m. on December 5, 2002, at the North Central Texas Council of Governments, 616 Six Flags Dr., Suite 200; and in Austin, Texas at 1:30 p.m. on December 9, 2002, at the Texas Commission on Environmental Quality, 12100 Park 35 Circle, Building F, Room 2210. The public comment period closed on December 9, 2002.

1.3 SOCIAL AND ECONOMIC CONSIDERATIONS

For a detailed explanation of the social and economic issues involved with any proposed strategies please refer to the preambles that precede each rule package accompanying this SIP.

1.4 FISCAL AND MANPOWER RESOURCES

The state has determined that its fiscal and manpower resources are adequate and will not be adversely affected through implementation of this plan.

CHAPTER 2: EMISSIONS INVENTORY

(No additions or revisions)

CHAPTER 3: PHOTOCHEMICAL MODELING

(No additions or revisions)

CHAPTER 4: DATA ANALYSIS

(No additions or revisions)

CHAPTER 5: RATE OF PROGRESS

(No additions or revisions)

CHAPTER 6: REQUIRED CONTROL STRATEGY ELEMENTS

Table 6-1 shows the emission reduction estimates projected from implementation of federal, state, and local initiatives.

Table 6-1 DFW NO_x Reduction Estimates¹

July 3, 1996 Base Case Emissions Inventory	1996 Base Case 6a (tpd)	Percent of 1996 Total	2007j Future Base²	2007 Future Control Strategy D_{ATT} (tpd)	Percent of 2007 Total
Area and Non-road sources	132.9	23%	136.5	106.6	33%
Point sources	99.4 ²	17%	121.3 ³	23 ⁴	7%
On-road mobile sources	322.4	55%	216.1	164.3	51%
Biogenic sources	26.6	5%	26.6	26.6	8%
TOTALS	581.3		500.5	320.6	

¹ See Chapter 3, Section 3.10

² Utility emissions portion of emissions total is based on 7/3/96 episode day

³ Utility emissions portion of emissions total is based on highest 30-day average emissions over 3rd quarter 1996-98, with growth projection to 2007 and previously adopted 30 TAC §117.105 electric utility RACT controls applied

⁴ Reductions applied from 30 TAC §117.106 (electric utility) and §117.206 (industrial/commercial/institutional) emissions specifications for attainment demonstration

EPA-ISSUED RULES	Estimated NO_x Reductions in 2007 (tpd)
Federal on-road measures: <ul style="list-style-type: none"> • Federal Phase II RFG • Tier 2 vehicle emission standards and federal low-sulfur gasoline • NLEV • Heavy-duty diesel standards 	93
Federal off-road measures: <ul style="list-style-type: none"> • Lawn and garden equipment • Tier 3 heavy-duty diesel equipment • Locomotives • Compression ignition standards for vehicles and equipment • Spark ignition standards for vehicles and equipment • Recreational marine standards 	48

TCEQ-ISSUED RULES	Estimated NO_x Reductions in 2007 (tpd)
Major point source NO _x reductions in 4 counties*	129
I/M (ASM, OBD, and remote sensing in 9 counties)	54.45
Low-emission diesel in 9 counties	3.48
SB 5 Voluntary Incentive Program**	16.3
Airport GSE electrification in 4 counties	6.12
Heavy equipment fleets—gasoline in 9 counties	1.8
Gas-fired water heaters, small boilers, and process heaters (statewide rule)	0.5
Other State measures: Energy efficiencies	0.7

DFW LOCAL INITIATIVES	Estimated NO_x Reductions in 2007 (tpd)
Speed limit reduction in 9 counties	5.42
VMEP in 9 counties	2.40 - 5.40
TCMs in 4 counties	4.73

* Major source NO_x reductions from: Title 40 Code of Federal Regulations Part 75 (40 CFR 75) affected utility boilers (126.2 tpd); non- 40 CFR 75 utility boilers (1.3 tpd); and industrial/commercial/institutional sources (1.6 tpd).

** This credit is equal to the sum of NO_x credits previously taken for the Tier 2/Tier 3 equipment accelerated purchase rule (13.8 tpd) and the heavy-duty diesel operating restriction rule (2.5 tpd), which are being proposed for repeal. Reductions from the new SB 5 voluntary incentive program in the 12-county DFW area are projected to surpass 16.3 tpd NO_x, based on the size of the equipment inventory eligible to participate in the program.

6.1 VOC RULE CHANGES (No change from April 2000 revision)

6.2 NO_x RULE CHANGES

Introduction (No change from April 2000 revision)

6.2.1- 6.2.8 (No change from April 2000 revision)

6.2.9 (Major Source NO_x Rules)

On April 19, 2000, the commission adopted new cement kiln rules as part of the ozone SIP control strategy for the DFW ozone nonattainment area. The rules required portland cement kilns in Bexar, Comal, Ellis, Hays, and McLennan Counties to meet specific NO_x emission limits.

Under these rules, owners or operators of cement kilns were given several options to meet the emission requirements in Chapter 117. The commission is adopting rules concurrent with this SIP revision to give the owners and operators of cement kilns in the affected areas additional flexibility in meeting their NO_x reduction requirements, through either the use of a technology option (for dry-process cement kilns) or emission reduction credits. In addition, owners and operators of wet-process kilns could, in lieu of mid-kiln firing, use some other form of secondary combustion which achieves equivalent levels of NO_x reductions, or could make other additions or changes to the kiln system which achieve at least a 30% reduction in NO_x emissions. Finally, owners and operators would be able to use a 90-day rolling average for determination of compliance with the source cap in lieu of the current 30-day rolling average.

The proposed changes would result in a similar level of emission reductions compared to the SIP rules originally adopted. Therefore, the NO_x reductions previously claimed in the DFW attainment demonstration SIP will, as a result of this rulemaking, be achieved through alternate, but equivalent, Chapter 117 rules.

6.2.10 - 6.3.15 (No change from April 2000 revision)

6.3 WEIGHT-OF-EVIDENCE (No change from April 2000 revision)

6.4 PROTOCOL FOR IMPLEMENTING THE ENERGY EFFICIENCY PROGRAM (New)

The commission is proposing that the development of the energy efficiency program be incorporated into the DFW SIP. The Texas Legislature anticipated the need for air quality improvement programs and initiated both energy efficiency measures and the TERP program through legislation. The commission seeks to continue the development of these programs to demonstrate progress in reducing NO_x emissions.

Energy efficiency measures are a critical part of the commission's plan for clean air. Not only do they decrease NO_x emissions, they also produce significant reductions in other criteria pollutants such as PM, SO₂, VOC, CO, and CO₂. When combined, various efficiency measures have the potential to add up to significant energy savings as well as emission reductions, thereby contributing to the overall goal of clean air in Texas.

The primary benefit of energy efficiency is its ability to decrease the demand for electrical generation, which provides for greater reliability, with the secondary benefit being emission reductions. However, one significant challenge is how to allocate the emission reductions on a geographic basis. Since Texas' electricity needs are primarily served by an isolated power grid controlled by the Electric Reliability Council of Texas (ERCOT), this issue can be overcome.

The Texas Legislature anticipated the need for energy efficiency programs in Texas and passed legislation to initiate such programs. The 76th Texas Legislature passed Senate Bill 7 which included, among other things, a commitment to improving air quality through an energy efficiency mandate to offset future growth in the demand of energy production. The details of this plan are set out in Chapter 25 of the Public Utility Commission of Texas' rules, which require at least a 10% reduction of electric utility's

growth in demand by January 1, 2004 and each year thereafter. These reductions can be achieved through energy efficiency measures or by utilizing renewable energy, such as wind power. The 77th Texas Legislature passed Senate Bill 5 which requires each political subdivision to establish a goal to reduce electricity consumption by five percent each year for five years, beginning January 1, 2002, with an annual report submitted to the State Energy Conservation Office demonstrating these reductions. To meet the goals set forth by the Texas Legislature, political subdivisions may develop municipal planning requirements, energy efficiency performance standards, home energy rating programs, and Energy Star programs. The bill also provides for a grant program to be administered through the PUC to provide financial incentives for energy efficiency measures. Furthermore, SB 5 establishes new building code requirements for all new construction statewide.

The energy savings resulting from the SB 7 and SB 5 measures are expected to achieve reductions of NO_x emissions from electricity generators. This proposed SIP estimates county-wide NO_x reductions within the ERCOT territory. The EPA's Office of Atmospheric Programs, in coordination with the TCEQ, ERCOT and PUC, has developed a methodology for quantifying NO_x emission reductions resulting from energy savings due to energy efficiency measures. The inputs consider the amount of expected energy savings (kWh) in different areas of the state above what is expected in the baseline. The outputs are an estimate of the emission reductions at each plant within the ERCOT region, which can be summed for each county. Using Matrix Algebra, Power Control Area Generation and Interchange Data are combined into simultaneous equations to determine how much of each power control area's generation is directed to each power control area. This is the first step in quantifying emission reductions associated with energy efficiency measures. The commission plans to refine the analysis of these reductions as part of the mid-course review process. Furthermore, the commission is soliciting comments on the management of this program in other regions of Texas, the incorporation of this program into the cap and trade program, and solutions to any other unresolved issues. Appendix A of the proposal details the methodology through which the emission reductions were estimated.

The proposed tonnage associated with energy efficiency measures is based on the most recent available given inputs. The commission expects the inputs to be updated prior to adoption if more information becomes available. The change in inputs will result in a change in the tonnage. In an attempt to enhance the energy efficiency program in terms of potential emission reductions, particularly since those reductions can now be quantified, the commission encourages interested parties to develop additional programs that utilize energy efficiency measures.

CHAPTER 7: FUTURE ATTAINMENT PLANS
(No additions or revisions)